REMARKS

This Amendment is filed in response to the Office Action dated September 7, 2006 (the Office Action), wherein Group I, claims 1-43, 85-95, and 98-102 were elected and species elections were made to an insulator element from a DHS5 site of a chicken β-globulin locus (claim 13) and hepatocytes (claim 37). As per a telephone conversation with the Examiner on about December 7, 2006, Applicant has cancelled claims to elected species DHS5 site and amended the independent claims under examination to recite an alternative species. The Examiner is thanked for the courtesy of the telephone call. There was no discussion of the merits of the claims or the prior art.

The original restriction requirement further indicated a species election for a SEQ ID; the SEQ ID NO:16 is hereby elected, if such election is required at this juncture. The lack of a previous election was unintended. SEQ ID NO:16 is a CTCF-binding site; as such, all of the now-pending claims now read on the same except claims 6, 7, 59, 60, 99, and 100.

Independent claims 1 and 85 were amended to recite CTCF-binding sites, as supported in as-filed claims 3 and 4 and also at, e.g., Table I. Independent claims 1 and 85 were also amended to recite that the transposon comprises at least two inverted repeat sequences that specifically bind to a Sleeping Beauty transposase, e.g., as in as-filed claim 24 and at, e.g., as in the section entitled "Transposonal Vectors" starting at page 27 of the specification.

Claims 1, 19, 26-28, 41-43, 48, 63, 85, and 93 were amended, as described below in detail.

Claims 2-4, 9-18, 24, 29-30, 56-57, 62, 68, 88-89, and 95-97 are cancelled.

Claims 36, 38-40, 44-55, 63-67, and 69-84 have been withdrawn.

The Examiner's concerns are addressed in the order presented in the Office Action.

The 35 U.S.C. §112 ¶2 rejection of claim 13 is moot since that claim has been cancelled.

Claims 27, 29-35, 37, 41-43, 93, and 95 were rejected under 35 U.S.C. §101 on the grounds that the claimed invention was drawn to non-statutory subject matter. Claims 27 and 93 are amended to recite an isolated cell. Withdrawal of this rejection is requested.

Claims 85-87, 91-95, and 102 were rejected under 35 U.S.C. §112 ¶2 on the grounds that they were indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The above-discussed amendments are understood to render this rejection moot and its withdrawal is requested.

Claims 3, 4, 23, 26, 41-43, and 95 were rejected under 35 U.S.C. §112 ¶2 on the grounds that they were indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention as follows. (a) Claims 3 and 4 were rejected with respect to language relating to the claimed "plurality". The Amendment of claim 1 to remove "plurality. . ." is believed to address this rejection. (b) Claim 26 was rejected for lack of antecedent basis for reciting "suicide sequence nucleic acid". Claim 26 was amended to depend from claim 25. (c) Claim 26 was further rejected for not specifying what the claimed independent promoter was independent from. Claim 26 was amended to specify independence from a promoter for the exogenous nucleic acid. (d) Claims 41-42 were rejected for lack of antecedent basis for "protein". Claims 41 and 42 are now dependent from claim 35, which recites a protein. Claim 43 was amended to depend from claim 42. (e) Claim 95 is cancelled and its rejection is moot.

Claims 19 and 63 were amended for consistency with respect to the CTCF-binding domain.

Claims 1-4, 13, 19-21, 23, 27, 29, 31-35, 41-43, 85-93, and 102 were rejected under 35 U.S.C. §102(b) in light of U.S. Pat. No. 5,610,053 (Chung et al.) as evidenced by Pirrotta (1988) *Biotechnology* 10:437-456 and Melcher U. *Molecular Genetics* updated 4 February 2006.

The Amended claims, however, are directed to, among other things, a transposon for a Sleeping Beauty transposase, so that the cited reference does not teach all of the claimed elements and withdrawal of this rejection is requested.

Claim 1-4, 13, 19-21, 23-35, 37, 41-43, 85-95, and 102 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hackett et al. (1998) WO 98/40510 in view of Chung et al. cited above.

An artisan, however, would not be motivated to combine Hackett et al. and Chung et al. to achieve the claimed combination of insulator elements with transposons for Sleeping Beauty transposases. The mechanism by which insulators flanking a DNA sequence sequester it from outside influences is not known (Chung et al., column 22, line 58) and therefore its mechanism of action was unpredictable at the time of filing. The leading models all include "looping" of the DNA sequence that is flanked by insulator-binding proteins. (Chung et al., column 22, line 58 to column 23, line 11). This looping will be accompanied by consequential deformation of DNA in and/or around the insulated DNA sequence. Transposition of Class II DNA transposons, the class to which the claimed Sleeping Beauty transposons belong, involves the binding of transposase molecules to each end of the transposon to form a synapatic complex - i.e., a loop Yanagihara K and K. Mizuuchi (2003). Progressive structural transitions within Mu

transpositional complexes. *Molecular Cell* 11: 215-224; Cui, Z., A.M. Geurts, G. Liu, C.D. Kaufman and P.B. Hackett (2002). Structure-function analysis of the inverted terminal repeats of the *Sleeping Beauty* transposon. *Journal of Molecular Biology* 318: 1221-1235. Accordingly, in cells transfected with a SB transposon, there will be two looping mechanisms that may be in competition: transposition and insulation. The artisan, therefore, would be motivated to seek out a non-looping and non-*Sleeping Beauty* solution; indeed, what is disclosed in Chung et al.'s P-transposon based approaches is believed to avoid looping. Moreover, there is no reasonable expectation of success in the proposed combination because of the unpredictability of: (a) the unknown insulator mechanisms and (b) the unpredictability of two potentially competing looping mechanisms. Withdrawal of this rejection is requested.

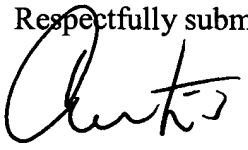
Claims 1-4, 13, 19-23, 27-35, 37, 41-43, 85-95, and 102 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hackett et al. (1998) WO 98/40510 in view of Chung et al. cited above. Claim 24, which has been incorporated into amended claims 1 and 85, was not rejected over this combination; accordingly, withdrawal of this rejection is requested.

Claims 1, 13, 25, and 26 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hackett et al. (1998) WO 98/40510 or Wooddell et al. in view of Chung et al. and in further view of Pope et al. (1997) *Eur. J. Cancer* 33:1005-1016. Claim 24, which has been incorporated into amended claims 1 and 85, was not rejected over this combination; accordingly, withdrawal of this rejection is requested.

Withdrawal of the rejections, rejoinder of the withdrawn claims, allowance of all of the claims is requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,



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